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ABSTRACT

To lead the continuing renewal of the nation's institutions, boost U.S. economic competitiveness, and promote responsible citizenship, American education must itself be renewed and restructured. All educators must be committed to providing a high quality education for all students that results in critical and creative thinking, cooperative problem-solving, reasoned and ethical analysis, responsible and moral action, and a lifelong disposition for thinking and learning. Higher-order thinking is complex, yields multiple solutions, requires interpretation and the use of multiple criteria, involves uncertainty, demands self-regulation of thinking processes, and requires considerable mental effort. Principles to support restructured learning include: (1) ensuring that all students receive an educational program supporting higher learning; (2) acknowledging different rates of development and learning; (3) stressing the teaching of higher-order thinking across all grade levels; (4) providing appropriate classroom environments; (5) ensuring diverse instructional approaches and appropriate student assessment measures; (6) providing relevant professional development opportunities; and (7) communicating higher learning expectations to families and the community. Implementation strategies stress the necessity for providing adequate resources; appropriately designed curricula, textbooks, assessments, and professional development activities; and opportunities for parental and community engagement in the planning, implementation, and evaluation processes. (MLH)

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RESTRUCTURING LEARNING FOR ALL STUDENTS

A Policy Statement by the Council of Chief State School Officers on Improved Teaching of Thinking

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The Council of Chief State School Officers (CCSSO)

The Council of Chief State School Officers (CCSSO) is a nationwide non-profit organization of the 57 public officials who head departments of elementary and secondary education in every state, the District of Columbia, the Department of Defense Dependents Schools, and five extra-state jurisdictions. CCSSO seeks its members' consensus on major education issues and expresses their views to civic and professional organizations, to federal agencies, to Congress, and to the public. Through its structure of committees and task forces, the Council responds to a broad range of concerns about education and provides leadership on major education issues.

Because the Council represents the chief education administrator, it has access to the educational and governmental establishment in each state and to the national influence that accompanies this unique position. CCSSO forms coalitions with many other education organizations and is able to provide leadership for a variety of policy concerns that affect elementary and secondary education. Thus, CCSSO members are able to act cooperatively on matters vital to the education of America's young people.

The CCSSO Resource Center on Educational Equity provides services designed to achieve equity in education for minorities, women and girls, and for disabled, limited English proficient, and low-income students. The Center is responsible for managing and staffing a variety of CCSSO leadership initiatives to provide better educational services to children and youth at risk to school success.

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INTRODUCTION

At the closing of the 20th century, dynamic and unanticipated global changes of a profound sort are occurring. National borders, ideologies of nations, the locus of economic power, and political alliances are shifting with remarkable speed. The demand for democratic governance advances in different parts of the world. The 21st century will begin with a very different world map, alignment of forces, and rules than have been known for most of this century.

To prepare our nation for these changes requires a commitment to learning for all that is greater than ever before made.

Our political, economic, and social structures depend on that commitment.

American education must lead the continuing renewal of our institutions. In a fundamental sense, American education also must be renewed. The confluence of a unique set of forces in the 1990's provides both a substantial challenge and an extraordinary opportunity for dramatic improvement and change in what, how, and how well American students learn.

One powerful stream at that confluence is the fundamental shifts which are taking place in the economy. According to the Commission on the Skills of the American Workforce in its report, **America's Choice: High Skills or Low Wages!**, deep and revolutionary change is necessary regarding the structure and organization of production, if this country is going to maintain its current standard of living in the world economy. The organization of production in the United States needs to undergo radical changes which will result in demands for highly skilled workers at levels never before required. The labor force needs of this decade and the next century will dictate that *all* workers—not just a small elite cohort—but workers at all levels must have well-developed abilities to learn easily and adapt to new circumstances on the job; to read complex materials, understand, and apply them; to use quantitative skills appropriately; to apply tools of production and management; to speak and write effectively; to work cooperatively as members of a team; and to undergo retraining, perhaps repeatedly.

The rapidity and fundamental nature of such change also present increasingly difficult demands on responsible citizenship. New relationships in politics and economics create new problems as well as novel benefits, and so require the ability to perform critical reviews, make ethical judgments, and take principled action by all citizens. These changes raise the level of complexity of choices and decisions—whether issues of distribution of resources, of peace and war, of social justice, of the environment—in a world seemingly shrunken by advancements in technology. It is imperative for a democratic society where decisionmaking is intended for all, that we pro-

vide the basis for higher order learning for all in order to enable our populace to make necessary civic decisions.

Schools, previously asked to ensure the development of basic skills, are now required to teach all students a new, broad range of cognitive skills demanded by the changing contexts in which students live. This new demand on schools is nothing less than a call for the democratization of thinking. Such a call brings sharp attention to those students placed most at risk to school success. Successful restructuring of learning that supports higher order learning for *all* students will require intense and persistent work, with particular emphasis given to the resources necessary to ensure that students placed at risk succeed as well.

DEFINITION OF HIGHER ORDER LEARNING

Another stream at this confluence includes the new findings from the cognitive sciences regarding the nature of thinking and the acquisition of thinking and learning capacities. Researchers do not agree on a precise and complete definition of higher order learning, but they do agree on key characteristics of higher order thinking. It is complex; yields multiple solutions; requires interpretation and the use of multiple criteria; involves uncertainty and finding structure in apparent disorder; demands self-regulation of thinking processes; and requires considerable mental effort. Insights from a substantial body of research provide techniques for improving teaching in ways that support higher order learning in the disciplines and the development of problem-solving skills. These are extraordinarily important to succeed with the agenda of the 1990's—extending the learning of high level thinking and reasoning abilities to *all* students.

The elements of higher order learning are not new. They represent timeless, longstanding concepts of learning never realized universally but only by small fractions of the population. What differs at the close of this century is that education for higher order learning is essential for *all*.

PRINCIPLES TO SUPPORT RESTRUCTURED LEARNING

Based on a review of research in the cognitive sciences regarding thinking and learning, the Council extends the following principles to guide state policymakers and other education decisionmakers as they attempt to restructure learning for all:

- **Ensure that all students receive an educational program that supports higher order learning.** It is imperative that all students, especially those placed at risk, have the opportunity and the necessary instructional and social support to develop fully their thinking and reasoning abilities for success in school and as adults. Particular effort must be made by state education agencies and all others in education to ensure the provision of such an education for disadvantaged students whose schooling frequently lacks a commitment to teaching for higher order learning. The teaching of thinking and reasoning must be integrated throughout all educational programs—whether in "regular" classrooms or in special programs for students with extra educational needs.

- **Acknowledge different rates of development and learning.** Students learn at very different rates. For those students who do not meet high standards and achievement outcomes by expected times, schools must provide intense supplementary resources.

- **Make certain that the teaching of thinking and other higher order skills are part of direct preparation for work.** Higher order learning should be immediately useful not only for those students who will attend post-secondary schooling but for those students who enter the workforce directly from secondary school.

- **Emphasize the teaching of thinking skills across all grade levels.** Research on thinking demonstrates clearly that higher order skills are required for learning at all levels of academic study. Teaching should emphasize thinking and problem-solving for all students. The development of "basic skills" should be simultaneous with the teaching of thinking and should not be considered a prerequisite to higher order learning.

- **Incorporate teaching of thinking skills in all parts of the curriculum.** Research indicates that thinking skills are best taught when based within subject disciplines. Several programs that teach thinking skills apart from subject matter can be effective as supplemental activities and deserve consideration, but there is general agreement that thinking skills should, at a minimum, always be taught within the subject areas. Courses in thinking skills should not substitute for the infusion of thinking and reasoning within the curriculum.

- **Ensure that classrooms serve as environments that support higher order learning.** While no simple formula or ratio exists to

guarantee the creation of such an environment, classroom structure—group size, organization of time, teacher responsibilities, etc.—must foster interaction that encourages learning. Students must be able to work cooperatively, have access to effective learning technologies, and be able to participate in sustained conversation about a specific subject.

• **Acknowledge and support a diversity of instructional approaches to support thinking**. Recent research in psychology and cognition identifies a variety of learning styles and intelligences. Instruction for higher order learning must adapt methods to differing styles, but keep constant the outcome of high achievement. Efforts toward flexibility in instructional method should also take into account differences in cultural styles and gender regarding student and teacher interaction. All such efforts must include high order intellectual challenge. Methods should differ but expectations for outcomes should be the same.

• **Assure student assessment measures higher order learning.** The content and design of assessment should provoke and engage students' knowledge and judgment, and require careful thought and problem-solving. Take seriously the adages "you get what you assess" and "teaching to the test", and build assessment measures that demand the sort of teaching that supports higher order learning. Teaching to the test can be a desirable strategy when the test assesses knowledge and skills indicative of high levels of thinking and reasoning. Examine current efforts by several states which have adopted operational science assessments, extended essays in language tests, portfolio assessments, and other performance examinations.

• **Provide significant and appropriate professional development opportunities**. Success at teaching for higher order learning requires fundamental changes in content, method, organization and relations within the classroom and supportive changes throughout the school system. These changes should lead to the creation of a supportive environment for thinking and learning within the classroom where the teacher acts as the facilitator for learning. These new roles are fundamentally different from those presented in typical teacher preparation and so require substantial re-education for experienced and new teachers and administrators. Furthermore, university-based teacher education programs must change significantly how they prepare their students. All these efforts will require time and financial resources.

• **Communicate expectations of student higher order learning to families and the community**. Educators must enlist the support of families and community organizations in achieving higher order learning goals for students. Expanded opportunities must be created for collaborative involvement between home and school in achieving this goal. Families must know of and be assisted in fulfilling their role in maximizing student learning and monitoring the progress of schools in meeting their responsibility to students.

IMPLEMENTATION STRATEGIES

The advances made in the cognitive sciences during the last two decades must inform restructuring of education practice. The bridge between what the theorists, the researchers and the scholars have discovered and actual practice must be built anew.

State education agencies can and must take a leading role in advancing the adoption and use of these powerful developments in the cognitive sciences. Implementation demands fundamental changes in the nature and organization of schooling. The states must assist local education agencies with technical, administrative, and financial assistance to ensure both the development of excellent instructional practice, and equitable provision of such practices. States must establish new strategies for curriculum development, research and development, student assessment, professional development, and financial support.

Examples of strategies that will strengthen instruction and support higher order learning for all include:

- **Provide necessary additional funding, materials, time, technical assistance, or sanctions to ensure that schools offer *all* students an education of higher order learning.** Because schooling for low income, minority, and language minority students typically is not one of higher order learning, extra effort must be made by states to make certain that schools restructure teaching and learning so that these students receive an education of thinking and reasoning.

- **Design curriculum frameworks and corresponding instructional materials, and direct the selection of textbooks that integrate knowledge; that support higher order learning; and that are sufficiently flexible to students' developmental needs and differences.** Such curricula should deepen the content of disciplines and affirm the contributions and perspectives of diverse cultural and linguistic groups, while increasing sensitivity to gender differences.

- **Design student assessments to measure accumulated, complex accomplishments rather than testing samples of discrete skills.** Acknowledge that the design of student tests drive the content and method of instruction, and frequently are an impediment to curriculum reform. Multiple choice tests are not consistent with teaching critical thinking, focus on lower-level skills, and frequently have a deleterious effect on the education of students.

- **Ensure that professional development activities provide teachers and administrators—as well as staff of local and state education agencies—with the capacity to promote higher order learning for all students in school and at home.** Most teacher education programs do not provide sufficient preparation or experience to ensure such learning, especially for culturally and linguistically diverse students. Nor

do they prepare teachers to work appropriately with families in this effort. States should provide professional development that is of sufficient quality (i.e., provides models of successful instruction for all students), length (i.e., lasts over periods of weeks and months and so provides continuity of support), and breadth (i.e., is available to teachers, administrators and staff of local and state education agencies) to ensure effective preparation, the development of local capacity, and systemwide change. States should also influence teacher pre-service education to include similar preparation.

- **Ensure parental and community support of instruction for higher order learning by engaging their active participation in all facets of schooling including the development of plans for achieving higher order learning goals, and in the implementation and evaluation of the activities that follow.** Special efforts and resources should be directed to elicit the support of those parents and communities that traditionally have not been active supporters of public education, and should be directed toward ensuring continuity of higher order learning processes beyond the classroom.

CONCLUSION

All educators, including chief state school officers, must be committed to the provision of a high quality education for *all* students that results in critical and creative thinking, cooperative problem-solving, reasoned and ethical analysis, responsible and moral action, and a life-long disposition for thinking and learning. Educators must pledge their efforts to assist all children and youth but reserve particular and intense commitment for those students who historically have not been provided an education of higher order and thoughtful learning.

CCSSO INITIATIVES

In 1989 the Council of Chief State School Officers examined efforts by states, local education agencies, and national organizations to change the practice and organization of schooling—to restructure schools. In that effort the Council reviewed activities related to changes in school governance, the nature and organization of the curriculum, professional roles for educators, and accountability that supports school restructuring. The Council also noted principles and strategies for restructuring schools. The fundamental criteria for success in school restructuring were, does the restructuring result in improved student learning, and does it allow students to reach their full potential?

The Council's work during 1990 builds on the previous year's emphasis on restructuring schools, and focuses its efforts on restructuring learning—fundamentally changing the relationship among student, teacher, knowledge, and other students in ways that support the development of higher order learning for all students. The Council has examined a broad range of work related to improving student thinking: recent advances in cognitive research about the nature of thinking; new efforts within the disciplines of language acquisition, mathematics, science and social studies; successful programs that teach thinking skills; changing the teacher's role to better assist the development of student thinking; and altering assessment in ways that helps support the teaching of higher order learning. The Council has also identified a set of principles to inform and guide state and local efforts to foster improved student thinking.

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